

Remarks

Claims 41-56, 58-61, and 63-75 have been rejected under 35 U.S.C. 112, as a result of the multiple use of the term “by barrier means”. Applicant has amended claim 41 to make clear that the “barrier means” recited separates the “first portion” from the “second portion” Accordingly it is requested that the rejection herein discussed be withdrawn as to claim 41 and its directly or indirectly dependent claims 42-56, 58-61, and 63-75.

Claim 57 has been amended to replace the typographical error “frist” with the intended word - - first - - .

The embodiments of the present invention aim to provide smoke filters capable of removing various components from tobacco smoke (without compromising the taste characteristics of smoke), while at the same time preventing an absorbent and/or catalyst incorporated into the filters from becoming poisoned by the particulate phase of the smoke (see page 1, lines 29 to 32 – all page references herein to the present application are to the corresponding International Application as published, WO 2005/023026). The embodiments of the present invention achieve this by providing a smoke filter which separates the vapour phase of smoke from the particulate phase of smoke (see page 1, lines 25 to 28).

The filter comprises a first portion co-axially surrounded by an annular second portion, said first portion comprising an adsorbent and/or catalyst and being closed against particulate material flow, and said second portion providing a through path for particulate material flow.

Advantageously, the two portions referred to in the preceding paragraph are separated by a barrier means (see page 2, lines 7 to 11, and Figure 1), formed from a vapour porous polymeric material having pores therein with a pore size of less than about $0.1\mu\text{m}$ (see page 2, lines 10 to 14), which prevents the passage of particulate material into the first portion.

Finally, during smoking of a smoking article, mainstream smoke, including a vapour phase and a particulate phase, is drawn into the upstream end of the smoke filter. The mainstream smoke is drawn through the second portion of the smoke filter. The vapour phase of the mainstream smoke diffuses through the pores in the vapour porous polymeric material into the first portion of the smoke filter wherein various components of the vapour phase are adsorbed and/or catalysed by the adsorbent and/or catalyst within the first portion of the filter. The remaining vapour phase and particulate phase is then drawn into the mouth of the consumer through the downstream end of the smoke filter. See page 5, lines 21 to 28.

Claims 41-48 and 56-75 have been rejected under 35 U.S.C. 103(a) over *Crellin* in view of *Rose*. In particular, the basis of the rejection is that it would be obvious to a person skilled in the art, from *Rose*, to size the pores of the vapour porous material disclosed in *Crellin* to be less than about $0.1\mu\text{m}$. Applicant respectfully traverses that rejection.

Crellin, for example, discloses a filter comprised of two concentric tubes, an inner tube of vapour porous material and an outer tube of substantially smoke-impervious material. The inner tube may be filled with carbon and blocked at each end (see *Crellin* Figure 2 and column 1, lines 37 to 52).

However, the only specific example given in *Crellin* for the vapour porous material is “highly porous paper” (see, amongst others, column 1, lines 29 to 30, column 2, lines 55 to 60, column 2, line 67, to column 3, line 2, column 3, line 29, and line 51, column 4, lines 32). Not a single other example, apart from paper, is mentioned.

There is certainly no teaching, or even suggestion, that the vapour porous material disclosed in *Crellin* could be a polymeric material, let alone one having pores less than about $0.1\mu\text{m}$ in size. In fact, referring to the previously filed Declaration of Peter Branton, paper would not be functional to perform in the manner required in Applicant’s embodiments.

Turning to the reference to *Rose*, it discloses a method for separating the gaseous constituents of tobacco smoke from the “fluidized” constituents or “condensates” (i.e., the visible part of the smoke stream comprised of small solid particles and liquid particles or droplets – see column 3, lines 59 to 63). The gaseous constituents are then disposed of since they contain many of the harmful substances normally present in tobacco smoke, while the condensates are collected for “smoking” after being aerosolized (see column 4, lines 26 to 37).

In *Rose*, the gaseous constituents are usually separated from the condensates by passing tobacco smoke through a tapered tube. During this passage, the mixture of the gaseous constituents and condensed constituents in the smoke stream suffers a directional change at a very sharp angle thereby causing the condensed constituents to effectively precipitate from the gaseous constituents (see column 4, lines 44 to 55). Conversely, in a minority of cases, a filter is used to perform the separation instead. The specific filter disclosed as being used is a Cambridge filter pad, which is simply a single disc made of

paper (see Figure 2, reference numeral 40, and column 7, lines 25 to 28). There is also certainly no teaching, or even suggestion, in this document that a polymeric material could be used instead of paper, let alone one having pores less than about 0.1 μ m in size.

In this regard, *Rose* is merely cumulative to *Crellin*.

In addition, *Rose* has absolutely nothing to do with smoking filters of the type actually present in smoking articles that would be used by a consumer. Instead, the only filter this document is concerned with (see preceding paragraph) is the filter to be used by a manufacturer to separate out the gaseous constituents from condensed constituents present in tobacco smoke prior to the condensed constituents then being “smoked” *via* aerosol by a consumer.

A skilled person concerned with the provision of an improved tobacco smoke filter for use in a smoking article would not have been made aware from *Crellin*, at the priority date of the present invention, that the inclusion of a polymeric barrier means would result in such an improved filter. As the only vapour porous material disclosed in *Crellin* is paper (see above), and as every single embodiment discussed therein uses the paper material, such a person would presume from reading this document that paper is essential and must be used. Consequently, the skilled person having been taught away from the embodiments of Applicant’s invention, would instead attempt to develop or redesign some other aspect of the smoking article filter described in *Crellin*.

Moreover, the person skilled in the art is considered to be knowledgeable in the technical field of the invention. Accordingly, the skilled person referred to by the Examiner would be the person skilled in the art of tobacco smoke filters for use in smoking articles. When looking to modify *Crellin*, such a person would also consider

other documents, but primarily only those concerned with filtration of the aforementioned kind. A skilled person may also look at documents in a closely related neighboring field, but only if they have an incentive to search said field. Accordingly, a skilled person concerned with improving a tobacco smoke filter for use in actual smoking articles would be presumed to not even look at documents concerned with producing a tobacco smoke condensate to be used as a healthier substitute for normal tobacco (*Rose*), let alone apply any teaching in such a document to a filter for use in smoking articles.

If the skilled person were to look at *Rose*, which is not likely for the reasons given in the preceding paragraph, such a person would only be taught to use a paper disc filter that would be totally unsuitable for use in the present invention – compare and contrast filter paper, 40, in Figure 2 in *Rose*, which does not allow the passage of particulates, with the general filter for smoking articles, 1, in Figure 1 in the present application, which does allow the passage of particulates through certain portions. Accordingly, the deficiencies of *Crellin* as a reference clearly cannot be remedied by reference to *Rose*.

Moreover, the fact that like *Crellin*, *Rose* also only teaches a paper filter/barrier means, would, if anything, only enforce the idea referred to above that only paper will suffice as the vapour porous membrane.

Finally, although, as mentioned by the Examiner, at column 10, lines 35 to 36, *Rose* refers to the fact that “normal cigarette smoke particle sizes may be in the range of about 0.2 microns”, the use of the phrase “may be” certainly does not encompass an article designed to filter out particles less than about 0.1 microns, and would not suggest such filtration to a person skilled in the art. Specifically, the embodiments of the present invention use a porous polymeric material having pores therein “of less than about

0.1 μ m" and there is no teaching of this particular pore size in *Rose*. Again the previously filed Declaration of Peter Branton establishes that paper filters cannot satisfy the requirement for a material having a very small pore size of less than 0.1 micron.

Accordingly, in light of the above, it is respectfully submitted that combining the teachings of *Crellin* and *Rose* cannot possibly result in a teaching of a filter for use in smoking articles which comprises a vapour porous polymeric material having pores therein with a pore size of less than about 0.1 μ m, as disclosed in the present application.

Therefore, the subject matter of the claims, as presently filed, must be considered to patentably define over *Crellin* and *Rose* either alone or in combination. Accordingly Applicant submits that the present application is now in condition for allowance, and such action is respectfully requested.

The Examiner is invited to contact the undersigned attorney by phone if there are any further issues that need discussion.

Respectfully submitted,

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Date: July 28, 2011

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